Sanitary Sewer Overflow Analysis and Planning (SSOAP) Toolbox

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The nation's sanitary sewer infrastructure is aging, with some sewers dating back over 100 years. Nationwide, there are more than 19,500 municipal sanitary sewer collection systems serving an estimated 150 million people and about 40,000 sanitary sewer overflow (SSO) events per year. Because of concerns of potential health and environmental risks associated with poor performance of many of these systems, the U.S. Environmental Protection Agency (U.S. EPA) had plans to add control and mitigation of SSOs to the existing National Pollutant Discharge Elimination System (NPDES) permit requirements. The proposed Capacity, Management, Operation, and Maintenance (CMOM) program for collection and treatment systems, although not yet formally adopted, is being widely accepted as good practices by sanitary sewer cities and municipalities.

To assist SSO municipalities in developing plans to mitigate SSO problems, the U.S. EPA signed a cooperative research and development agreement (CRADA) in 2002 with Camp, Dresser, and Mckee (CDM) to develop a public-domain computer analysis and modeling tool. This CRADA will result in (1) a review report of rainfall-dependent infiltration/inflow (RDII) prediction methods, (2) a computer tool for determining unit hydrograph parameters from monitored sewer flow data, (3) a computer software for computing inflow hydrographs (dry weather and RDII components) at a sewer junction for storm events and from land use data and other characteristics of the tributary area to the junction, (4) a computer software to link inflow hydrographs to the U.S. EPA Storm Water Management Model (SWMM) model of a sanitary sewer system, (5) a Windows-based database management system to facilitate the operation and analysis of various computer tools in the toolbox, and (6) an in-depth engineering and modeling guide for performing capacity analysis of a sewer system and SSO planning using the computer tools developed from this CRADA.